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EXAMINER

VU, TRISHA U

ART UNIT	PAPER NUMBER
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2112

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/667,091

Applicant(s)

LIANG, PING

Examiner

Trisha U. Vu

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2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8-19,21-29 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-19,21-29 and 31-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1, 3-6, and 8-19, 21-29, and 31-34 are presented for examination.

Claims 2, 7, 20, and 30 were canceled by Applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-6, 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garreau (6,769,035) in view of Huang (6,280,252) and further in view of Golka et al. (6,507,882) (herein after Golka).

As to claims 1 and 3, Garreau teaches a mobile computing device (10) that can operate both as a host or a device (Fig. 3) comprising: a processor (14) that can function as a USB controller configured to operate as a USB host or a USB device (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5); a housing having an expansion module bay (opening space at the slot for receiving expansion board) for receiving an expansion module that includes an expansion card (col. 3 lines 40-44); wherein the expansion card is operationally coupled to the mobile computing device via a first USB connector (in expansion board); and a second USB connector (expansion board connector) positioned in the housing to mate with the first USB connector, and the expansion card interfaces

with a USB interface (Fig. 3). However, Garreau does not explicitly teach the first and second connectors have a form factor smaller than a standard USB form factor. Huang teaches connectors have a form factor smaller than a standard USB form factor (mini USB connector) (col. 1, lines 5-10, 36-67, and col. 2, lines 1-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement USB connectors having a smaller form factor as taught by Huang in the system of Garreau to provide a more compact system. However, Garreau and Huang do not explicitly disclose the computing device includes a first power conversion circuit and the expansion module includes a second power conversion circuit coupled between the first connector and the interface, wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion. Golka teaches computing device (100) includes a first power conversion circuit (in computer 100, power supply 120 may be modified to provide additional voltages to expansion module 160) and the expansion module includes a second power conversion circuit coupled between the connector and the interface (expansion module 160 may include a power converter to derive the requisite voltages from the voltages available from power supply 120), wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a first and second conversion circuits as taught by Golka in the system of Garreau and Huang to provide proper power required by the specific connected expansion device.

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As to claim 4, Garreau further teaches a USB controller (14) inside the housing of the mobile device (Fig. 3, and col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5).

As to claim 5, Garreau further teaches the USB controller is configured to function as a USB host (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5).

As to claim 6, Garreau further teaches the USB controller is configured to function as a USB device (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5).

As to claims 8, 9, Golka further discloses the second power conversion circuit reduces/boosts the voltage of a signal on the first USB connector to a corresponding interface voltage and provides the reduced/boosted voltage to the interface if the voltage on the first USB connector is higher/less than the corresponding interface voltage (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34).

As to claims 10, 11, Golka further discloses the second power conversion circuit reduces/boosts the voltage of an interface signal to a voltage expected at the first connector and provides the reduced/boosted voltage to the first connector if the interface voltage is greater/less than expected (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34).

As to claim 12, Garreau further teaches a USB controller (14) within the housing, and the first power conversion circuit coupled between the USB controller and the second USB connector (as modified above by Golka).

As to claims 13, 14, Golka further teaches the first power conversion circuit reduces/boosts the voltage of a signal on the second USB connector to a corresponding

controller voltage and provides the reduced/boosted voltage to the controller if the voltage on the second USB connector is higher/less than the corresponding controller voltage (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34).

As to claims 15, 16, Golka further teaches the first power conversion circuit reduces/boosts the voltage of a controller signal to a voltage expected at the second connector and provides the reduced/boosted voltage to the second connector if the controller voltage is higher/less than the corresponding voltage expected at the second connector (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34).

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garreau (6,769,035) in view of Huang (6,280,252) and Golka et al. (6,507,882) (herein after Golka), and further in view of Kikinis (5,841,424).

As to claim 17, the argument above for claim 1 applies. However, Garreau, Huang and Golka do not explicitly teach an adapter having a third connector that is connected to a fourth connector, the third connector being a USB connector having a standard USB form factor, the fourth connector configured to mate with one of the first and second connectors. Kikinis discloses an adapter having a connector being a USB connector having a standard USB form factor, and another connector configured to mate with one of the connectors of other devices or PDA (note Fig. 6, col. 4. lines 49-67, and col. 5, lines 52-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an adapter as taught by Kikinis in the system of

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Garreau, Huang and Golka to expand the connection with other device(s) and allow successful interface to a specific peripheral device (col. 4, lines 14-28).

4. Claims 18, 21-26, 28, 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garreau (6,769,035) in view of Golka et al. (6,507,882) (herein after Golka).

As to claim 18, Garreau teaches a mobile computing device (10) that can operate both as a host or a device (Fig. 3) comprising: a housing having an expansion module bay (opening space at the slots for receiving expansion boards) for receiving an expansion module that includes an expansion card (col. 3 lines 40-44); a processor (processor 14) that can function as a USB controller configured to operate as a USB host or a USB device within the housing (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5); and a USB connector (expansion board connector 18) coupled to the USB controller; the USB connector positioned within the housing for operationally coupling the expansion card the mobile computing device via a USB interface (Fig. 3). However, Garreau does not explicitly disclose the computing device includes a first power conversion circuit and the expansion module includes a second power conversion circuit coupled between the first connector and the interface, wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion. Golka teaches computing device (100) includes a first power conversion circuit (in computer 100, power supply 120 may be modified to provide additional voltages to expansion module 160) and the expansion module includes a second power conversion circuit coupled between the connector and the interface (expansion module

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160 may include a power converter to derive the requisite voltages from the voltages available from power supply 120), wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a first and second conversion circuits as taught by Golka in the system of Garreau to provide proper power required by the specific connected expansion device.

As to claims 21, 22, Golka further teaches the first power conversion circuit reduces/boosts the voltage of a signal on the USB connector to a corresponding controller voltage and provides the reduced/boosted voltage to the controller if the voltage on the USB connector is higher/less than the corresponding controller voltage (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34).

As to claims 23, 24, Golka further teaches the first power conversion circuit reduces/boosts the voltage of a controller signal to a voltage expected at the USB connector and provides the reduced/boosted voltage to the USB connector if the controller voltage is higher/less than the corresponding voltage expected at the USB connector (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34).

As to claim 25, Garreau further teaches the USB controller is a USB host (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5).

As to claim 26, Garreau further teaches the USB controller is a USB device (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5).

As to claim 28, Garreau teaches an expansion module (10 and associated circuitry) for a mobile device that can operate both as a USB host or a USB device (Fig. 3) comprising: a USB interface (I/O controller 16 and associate circuitry) coupled to a processor (processor 14) that can function as a USB controller configured to operate as a USB host or a USB device (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5); and an expansion card (expansion board) coupled to the USB interface for providing expansion module function; and a USB connector (expansion board connector 18) for the USB interface (Fig. 3). However, Garreau does not explicitly disclose the computing device includes a first power conversion circuit and the expansion board includes a second power conversion circuit, wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion. Golka teaches computing device (100) includes a first power conversion circuit (in computer 100, power supply 120 may be modified to provide additional voltages to expansion module 160) and the expansion board includes a second power conversion circuit (expansion module 160 may include a power converter to derive the requisite voltages from the voltages available from power supply 120), wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a first and second conversion circuits as taught by Golka in the system of Garreau to provide proper power required by the specific connected expansion device.

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As to claims 31, 32, Golka further discloses the second power conversion circuit reduces/boosts the voltage of a signal on the first USB connector to a corresponding interface voltage and provides the reduced/boosted voltage to the interface if the voltage on the first USB connector is higher/less than the corresponding interface voltage (note col. 6, lines 1-8 wherein the charging adapter converts the one voltage to the other).

As to claims 33, 34, Golka further discloses the second power conversion circuit reduces/boosts the voltage of an interface signal to a voltage expected at the first connector and provides the reduced/boosted voltage to the first connector if the interface voltage is greater/less than expected (note col. 6, lines 1-8 wherein the charging adapter converts the one voltage to the other).

5. Claims 19 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garreau (6,769,035) in view of Golka et al. (6,507,882) (herein after Golka) as applied to claims 18 and 28 above, and further in view of Huang (6,280,252).

As to claims 19 and 29, Garreau and Golka do not explicitly teach the USB connector has a non-standard USB form factor. Huang teaches connectors have a form factor smaller than a standard USB form factor (mini USB connector) (col. 1, lines 5-10, 36-67, and col. 2, lines 1-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement USB connectors having a smaller form factor as taught by Huang in the system of Garreau and Golka to provide a more compact system as today's digital equipment is getting smaller in size.

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6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garreau (6,769,035) in view of Tagi (6,473,790) and further in view of Golka et al. (6,507,882) (herein after Golka).

As to claim 27, Garreau teaches a computing device (10) that can operate both as a USB host or a USB device (Fig. 3) comprising: a housing having an expansion module bay (opening space at the slot for receiving expansion board) for receiving an expansion card (col. 3 lines 40-44); a processor (14) that can function as a USB controller configured to operate as a USB host or USB device within the housing (col. 3 line 55 to col. 4 line 5, and col. 4 line 62 to col. 5 line 5); a USB connector (expansion board connector 18) for the USB controller; the USB connector being positioned within the housing to operationally couple the expansion card to the mobile personal digital assistant via a USB interface and another USB connector (in expansion board) (Fig. 3). However, Garreau does not explicitly disclose the computing device being a personal digital assistant (PDA). Tagi teaches PDA (col. 13 lines 16-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the computing device of Garreau to be PDA as taught by Tagi to provide user a portable computer having so many convenient functions while traveling including schedule management, address notebook function, etc. (col. 13 lines 16-23). However, Garreau and Tagi do not explicitly disclose the computing device includes a first power conversion circuit and the expansion module includes a second power conversion circuit, wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion. Golka teaches computing device (100)

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includes a first power conversion circuit (in computer 100, power supply 120 may be modified to provide additional voltages to expansion module 160) and the expansion module includes a second power conversion circuit (expansion module 160 may include a power converter to derive the requisite voltages from the voltages available from power supply 120), wherein at any given time only the first power conversion circuit or the second power conversion circuit performs power conversion (Figs. 1-2 and col. 2 lines 33-46 and col. 4 lines 17-34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a first and second conversion circuits as taught by Golka in the system of Garreau and Tagi to provide proper power required by the specific connected expansion device.

Response to Arguments

7. Applicant's arguments, filed 12-07-04, with respect to the newly added limitation "a first and a second power conversion circuits wherein at any given time only the first or the second power conversion circuit performs power conversion" have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art reference(s).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trisha Vu whose telephone number is 571-272-3643. The examiner can normally be reached on Mon-Thur and alternate Fri 8:00am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Trisha Vu
Examiner
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uv



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